

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY



(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 24 NOV 2005

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Applicant's or agent's file reference 2003P13046WO		<b>FOR FURTHER ACTION</b> See Form PCT/PEA/416	
International application No. PCT/EP2004/051824	International filing date (day/month/year) 18.08.2004	Priority date (day/month/year) 28.08.2003	
International Patent Classification (IPC) or national classification and IPC H04L12/56, H04Q11/00			
Applicant SIEMENS AKTIENGESELLSCHAFT			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  22.06.2005		Date of completion of this report  25.11.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer  Ciurel, C  Telephone No. +31 70 340-4963 	

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**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/051824

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-11 as originally filed

**Claims, Numbers**

1-15 as originally filed

**Drawings, Sheets**

1/1 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-15
	No: Claims	
Inventive step (IS)	Yes: Claims	1-15
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

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**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US 2003/099243 A1 (KANG MINHO ET AL) 29 May 2003 (2003-05-29)

D2: VOKKARANE V M ET AL: "Threshold-Based Burst Assembly Policies for QoS Supp in Optical Burst-Switched Networks" PROCEEDINGS OF THE SPIE, SPIE, BELLINGHA VA, US, vol. 4874, 2002, pages 1-11, XP002269170 ISSN: 0277-786X

**1 Independent claim 1**

- 1.1 The present application concerns a method of aggregation of bursts in Optical Burst-Switched networks or optical networks, in which packets are aggregated to form bursts. The method determines the average number of packets per burst for a given maximum allowable delay of the packets and an average packet rate, said average number of packets per burst being a value defined between an upper and a lower limit, according to **claim 1**.
- 1.2 The **closest prior art** is patent application US 2003/099243 A1 (**document D1**), which discloses a method for transmission of data packets through a network where said packets with a maximum allowable delay, and an average packet size are aggregated in a node of the network to a burst and the burst is transmitted with an average number of packets into the network and passes at least a switch, where the average number of packets per burst is between an upper limit and a lower limit.
- 1.3 The **difference** of claim 1 over the prior art is that the upper and lower limits are

- determined taking into consideration several other different transmission and switch parameters, such as switching time, the Erlang formula of traffic for the burst blocking probability and the number of channels, the average packet size.
- 1.4 The **technical effect** of this difference is that an optimum number of packets per burst is determined.
  - 1.5 The **objective problem** to be solved by the present invention may therefore be regarded as: how to aggregate an optimal number of packets into a burst by reducing the blocking probability in the optical switch and to maximize the data throughput.
  - 1.6 None of the available prior art documents teaches, hints or suggests a solution to this problem.

**Document D1** discloses only a method in which packets are aggregated into bursts by adaptively changing the burst size according to the network load. The document D1 does not disclose or suggest how to resolve the problems affecting the determination of the optimum number of packets for a given maximum allowable delay and an average packet rate as to lead to low blocking probability of the switch and achievable data throughput.

**Document D2** (XP002269170 cited in the ISR) discloses a threshold-based burst aggregation technique in conjunction with a burst segmentation policy to provide QoS in optical burst-switched networks. The document investigates various burst aggregation strategies which differentiate bursts by assigning different burst priorities to bursts that contain packets with different QoS requirements. Document D2 relate to general state of the art of burst aggregation and does not disclose or render (in combination) obvious the method of claim 1.

Thus, the subject-matter of claim 1 is not derivable from any one of the documents nor their combination without exercise of inventive step. Therefore, claim 1 meets the requirements of Article 33(2) and (3) PCT.

## **2 Independent claim 2**

Independent **claim 2** relates to the same subject-matter as claim 1 and also meet the requirements of Article 33(2) and (3) PCT.

**3 Dependent claims**

As **claims 3-15** are dependent on claim 1, claims 3-15 also meet the requirements of Article 33(2) and (3) PCT.

**4** The present invention is **susceptible of industrial application**, Article 33(4) PCT.

**Re Item VIII**

**Certain observations in the international application**

**5** The application does not meet the requirements of **Article 6 PCT**, because **claim 1 is not clear and concise**.

**5.1** Claim 1 is drafted as a method claim.  
However, the features in the method **claim 1 relate to apparatus technical features (e. node of the network, switch, network)** rather than clearly defining the steps of a method. The intended limitations are therefore not clear from this claim, contrary to the requirements of **Article 6 PCT**.

**5.2** Claim 1 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The following functional statements do not enable the skilled person to determine which technical features are necessary to perform the stated functions:

" ... the burst is transmitted with an average number of packets and a **link speed (ls)**":

it is not clear if **link speed (ls)** is a parameter characterising **the burst** or if link speed is parameter characterising **another** feature.

5.3 From the definition of the subject-matter of claim 1 is not clear which features can be considered as part of the preamble and which is the characterizing portion of the claimed subject-matter, thereby rendering the definition of the subject-matter of claim 1 unclear (**Article 6 PCT, Rule 6.3(b) PCT**).

5.4 In claim 1 the applicant has made a reference that does **not have an antecedent base in the claim**, by using the term " said average number of packets per burst (ppb)", thereby rendering the definition of the subject-matter of claim 1 unclear, Article 6 PCT.

Hence, **claim 1 as a whole is not clear** as required by **Article 6 PCT**.

5.5 Although **claims 1 and 2** have been drafted as separate independent claims, they appear to **relate effectively to the same subject-matter** and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and/or in respect of the terminology used for the features of that subject-matter. The aforementioned claim therefore **lack conciseness** and as such do not meet the requirements of **Article 6 PCT**.

5.6 Claims 1-3 are not in the **two-part form** in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

5.7 To meet the requirements of Rule 5.1(a)(ii) PCT, **documents D1 and D2**, which represent a relevant state of the art with regard to the present invention, **should have been identified** in the opening part of the description and the relevant background art disclosed therein should have been briefly discussed.

**INTERNATIONAL PRELIMINARY  
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(SEPARATE SHEET)**

International application No.

PCT/EP2004/051824